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(54) SINGLE CRYSTAL SILICON CARBIDE INGOT AND ITS PRODUCTION

(57) Abstract:

PROBLEM TO BE SOLVED: To obtain a single crystal ingot from which large-sized wafers may be cut out with good reproducibility without restriction in carrier concentration by forming this single crystal of a seed crystal part, a buffer layer part where a prescribed amt. of an impurity is added to suppress the occurrence of a micropipe defect and a main body part which is controlled in crystal polyshapes and an impurity concn. to a desired shape and concn.

SOLUTION: For example, silicon carbide powder raw materials 2 are sublimated and recrystallized on a silicon carbide single crystal substrate 1 to be used as a seed crystal, by which this silicon carbide single crystal substrate 1 is mounted on the inside surface of the cap 4 of a graphite crucible 3 and the raw materials 2 are packed into the graphite crucible 3. The 6H type silicon carbide single crystal substrate 1 in a (0001) direction in growth face bearing is mounted at the inside surface of the cap 4 of the crucible 3 as the seed crystal and the raw materials 2 are packed into the crucible 3. After double quartz tubes 5 are evacuated, the raw material temp. is regulated to 2000°C and while N_2 is supplied to the growth surface, a buffer crystal is grown. The mixing ratio of the gaseous N_2 is lowered without stopping the growth and the silicon carbide single crystal which is the main body, is grown in a gaseous mixture atmosphere.

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